2

Recent Events In California Water

This chapter highlights key infrastructure and institutional changes that have occurred since the publication of Bulletin 160-93, and reviews the status of selected programs. An overview of significant legislative actions is provided, and the legislative framework for California water management is summarized in the appendix.

Infrastructure Update

A common theme in previous updates of the *California Water Plan* has been the need to respond to California's continually increasing population. Population growth brings with it the need for new or expanded infrastructure. This section provides a very brief overview of the largest infrastructure projects which are now under construction or have been recently completed. Some of these projects are described in more detail in later chapters.

California's increasing population is a driving factor in future water management planning.

Large dams under construction or recently completed are listed in Table 2-1. Large conveyance projects under construction or recently completed are listed in Table 2-2. Information about smaller-scale new water supply facilities, including water recycling and desalting plants, can be found in Chapter 5 and Chapters 7-9.

TABLE 2-1

Large Dams Under Construction or Recently Completed

Dam	*Constructing Agency*	*Estimated Capacity (taf)*	*Reservoir Purpose*	*Project Cost[a] (million $)*
Seven Oaks	USACE	146	flood control	366
Los Vaqueros	CCWD	100	offstream storage[b]	450
Eastside	MWDSC	800	offstream storage	2,000

[a] Project construction include costs for land acquisition, environmental mitigation, and associated facilities (such as pipelines and road relocations).
[b] Offstream storage for water quality and emergency service; no new water supply created.

TABLE 2-2

Major Water Conveyance Facilities Since 1992

Facility	*Constructing Agency*	*Status*	*Length (miles)*	*Maximum Capacity (cfs)*
Coastal Branch Aqueduct	DWR	completed 1997	100	100
Eastside Reservoir Pipeline	MWDSC	completed 1997	8	1,000
East Branch Enlargement	DWR	completed 1996	100	2,880
Mojave River Pipeline	MWA	started 1997	70	94
Old River Pipelines (Los Vaqueros Project)	CCWD	completed 1997	20	400
East Branch Extension	DWR	started 1998	14	104
Inland Feeder Project	MWDSC	started 1997	44	1,000
Morongo Basin Pipeline	MWA	completed 1994	71	100
New Melones Water Conveyance Project	SEWD and CSJWCD	completed 1993	21	500

TABLE 2-3

Large Structural Fishery Restoration Projects

Project	*Owner*	*Description*
Shasta Dam Temperature Control Device	USBR	An approximately $83 million modification to the dam's outlet works to allow temperature-selective releases of water through the dam's powerplant was completed in 1997.
Red Bluff Diversion Dam Research Pumping Plant	USBR	A $40 million experimental facility to evaluate fishery impacts of different types of pumps diverting Sacramento River water into the Tehama-Colusa and Corning Canals was contructed in 1995.
Butte Creek fish passage	Western Canal Water District and others	A multi-component project to improve fish passage by removing small irrigation diversion dams from the creek. By 1998, five diversion dams will have been removed.
Maxwell Irrigation District fish screen	Maxwell ID	An 80 cfs diversion on the Sacramento River was screened in 1994.
Pelger Mutual Water Company fish screen	PMWC	A 60 cfs diversion on the Sacramento River was screened in 1994.

Table 2-3 lists some of the largest examples of recently completed structural environmental restoration actions. Several more fish screening projects in the Sacramento River system are expected to begin construction or to be completed in 1998. Details on these facilities can be found in Chapters 5 and 8. Table 2-4 shows a sampling of completed smaller restoration projects.

Legislative Update

This section summarizes major changes within the last five years to State and federal statutes affecting water resources management, together with the status of ongoing efforts to reauthorize some key federal statutes. The existing statutory and regulatory framework for California water management is summarized in Appendix 2A.

State Statutes

Local Water Supply Reliability. In 1995, the Legislature enacted three bills dealing with water supply reliability and long-range planning to serve future water needs. Two of the bills (Statutes of 1995, Chapters 330 and 854) amended requirements for preparing urban water management plans by requiring that local agencies make a specified assessment of the reliability of their water supplies. (Water agencies serving more than 3,000 customers or 3 taf annually are required to prepare urban water management plans and to update the plans at least every five years.) Local water agencies are required to evaluate the reliability of their supplies for varying water year types.

The third bill (Statutes of 1995, Chapter 881) requires that cities and counties making specified land use planning decisions, such as amending a general plan, consult with local water agencies to determine if water supply is available. The bill also requires that findings by local water agencies on water supply availability be incorporated into cities' or counties' environmental documents for the proposed action. To date, there are no statewide data available on local agen-

TABLE 2-4

Sample Restoration Projects Funded in Part by the SWP's 4-Pumps Program

Location	*Description*	*Implementing Agency(ies)*	*Capital Costs*	*Completion Date*
Suisun Marsh Fish Screening Project				
Suisun Marsh	Design, construct, and install seven fish screens on diversions for managed wetlands within Suisun Marsh.	Suisun Resource Conservation District, DFG, DWR, USBR	$2,000,000	1997
Durham Mutual Fish Screens and Ladder				
Butte Creek at Durham Mutual Dam	Install two fish screens and an improved high volume fish ladder to eliminate entrainment and improve fish passage.	Durham Mutual Water Company, USBR, DWR, DFG	$930,000	1998
Parrot-Phelan Fish Ladder				
Butte Creek at Parrot-Phelan Dam	Design and construct a pool-and-chute fish ladder to provide fish passage.	DFG, USBR, DWR	$800,000	1995
Mill Creek Water Exchange Project				
Mill Creek	Fund operation of an irrigation well to replace diversions (up to 25 cfs) bypassed to provide flows for anadromous fish.	DFG, DWR	$559,000	Phase II-Summer 1994
Magneson Salmon Habitat Restoration and Predator Habitat Isolation Project, Merced River				
Merced River (River Mile 29-30)	Restore river channel and isolate abandoned gravel pit.	DFG, DWR	$336,000	1996
Stanislaus River Spawning Habitat Restoration, 3 Riffles				
Stanislaus River	Restore salmon spawning gravel at three sites.	DFG, DWR	$209,000	1994

The Department's Coastal Branch extension from Kings County to Santa Barbara County was completed in 1997.

cies' implementation of these new requirements. The statute did not require reporting on consultations or findings to the State CEQA clearinghouse or to any external agency.

Financing Water Programs and Environmental Restoration Programs (Proposition 204). California voters approved Proposition 204—the Safe, Clean, Reliable Water Supply Act—in 1996. The act authorized the issuance of $995 million in general obligation bonds to finance water and environmental restoration programs throughout the state. Approximately $600 million of these bonds would provide the State share of costs for projects to benefit the Bay-Delta and its watershed, including $390 million of this amount to implement CALFED's ecosystem restoration program for the Bay-Delta. These latter funds would be available after final federal and State environmental documents are certified and a cost-sharing agreement is executed between the federal and State governments. Table 2-5 summarizes programs authorized for Proposition 204 funding.

TABLE 2-5

Proposition 204 Funding Breakdown

Program	*Dollars (in millions)*
Delta Restoration	**193**
CVPIA State share	93
Category III State share	60
Delta levee rehabilitation	25
South Delta barriers	10
Delta recreation	2
CALFED administration	3
Clean Water and Water Recycling	**235**
State Revolving Fund Clean Water Act loans	80
Clean Water Act grants to small communities	30
Loans for water recycling projects	60
Loans for drainage treatment and management projects	30
Delta tributary watershed rehabilitation grants and loans	15
Seawater intrusion loans	10
Lake Tahoe water quality improvements	10
Water Supply Reliability	**117**
Feasibility investigations for specified programs	10
Water conservation and groundwater recharge loans	30
Small water project loans and grants, rural counties	25
Sacramento Valley water management and habitat improvement	25
River parkway program	27
CALFED Bay-Delta Ecosystem Restoration Program	**390**
Flood Control Subventions	**60**
Total	**995**

Proposition 218. Voter approval of Proposition 218 in November 1996 changed the procedure used by local government agencies for increasing fees, charges, and benefit assessments. Benefit assessments, fees, and charges that are imposed as an "incident of property ownership" are now subject to a majority public vote. Proposition 218 defines "assessments" as any levy or charge on real property for a special benefit conferred to the real property, including special assessments, benefit assessments, and maintenance assessments. Proposition 218 further defines "fee" or "charge" as any levy (other than an ad valorem tax, special tax, or assessment), which is imposed by an agency upon a parcel or upon a person as an incident of property ownership, including a user fee or charge for a property-related service.

Although there are many tests to determine if a fee or charge is subject to the provisions of Proposition 218, the most significant one is whether the agency has relied upon any parcel map for the imposition of the fee or charge. There is currently uncertainty in the interpretation of Proposition 218 requirements, especially as they relate to certain water-related fees and charges. From one point of view, Proposition 218 could be interpreted as a comprehensive approach to regulate all forms of agency revenue sources. This broad interpretation would include all fees and charges for services provided to real property. Types of water-related charges and fees that may be affected by Proposition 218's requirements include meter charges, acreage-based irrigation charges, and standby charges.

Additional legislation or judicial interpretation may be needed to clarify the application of Proposition 218 to fees and charges used by water agencies. Several water industry groups are working on proposals for clarifying legislation. To date, there has been one water-related legislative clarification of Proposition 218. A 1997 statute clarified that assessments imposed by water districts and earmarked for bond repayment are not subject to the proposition's voter approval requirements.

Municipalities and special districts are beginning to seek voter approval of assessments as required by Proposition 218. Many assessments to fund existing programs have been receiving voter approval. There has been at least one example, however, of a water agency whose proposed assessment was not approved. Monterey County Water Resources Agency did not receive voter approval for an assessment to support existing programs—groundwater quality monitoring, water conservation, and nitrate management outreach—funded by water standby charges. Examples of MCWRA's proposed assessment charges were $1.67 per irrigated acre for agricultural land use and $2.26 per parcel for single-family dwellings.

Water Recycling. In 1995, provisions of the Water Code, Fish and Game Code, Health and Safety Code, and other statutes were amended to replace terms such as wastewater "reclamation" and "reclaimed water" with "water recycling" and "recycled water." The legislation was intended to enhance public acceptance of recycled water supplies.

MTBE. Detection of methyl tertiary butyl ether in water supplies soon after it was approved for use as an air pollution-reducing additive in gasoline has raised concerns about its mobility in the environment. Legislation enacted in 1997 included several provisions dealing with MTBE regulation, monitoring, and studies. One provision required the Department of Health Services to establish a primary (health-based) drinking water standard for MTBE by July 1999, and a secondary (taste and odor) drinking water standard by July 1998. (MTBE can be detected by taste at very low concentrations, hence the early requirement for a secondary drinking water standard.)

Federal Statutes

Safe Drinking Water Act. The Safe Drinking Water Act, administered by the U.S. Environmental Protection Agency in coordination with the states, is the chief federal regulatory legislation dealing with drinking water quality. The 104th Congress reauthorized and made significant changes to the SDWA, which had last been reauthorized in 1986. Major changes included:

- Establishing a drinking water state revolving loan fund, to be administered by states in a manner similar to the existing Clean Water Act State Revolving Fund. Loans would be made available to public water systems to help them comply with national primary drinking water regulations and to upgrade water treatment systems.
- The standard-setting process for drinking water contaminants established in the 1986 amendments was changed from a requirement that EPA adopt standards for a set number of contaminants on a fixed schedule to a process based on risk assessment and cost/benefit analysis. The 1996 amendments require EPA to publish (and periodically update) a list of contaminants

not currently subject to NPDWRs and to periodically determine whether to regulate at least five contaminants from that list, based on risk and benefit considerations.

- A requirement that states conduct vulnerability assessments in priority source water areas expanded existing source water quality protection provisions. States are authorized to establish voluntary, incentive-based source protection partnerships with local agencies. This activity may be funded from the new SRF.
- As a result of the 1996 amendments, EPA adopted a more ambitious schedule for promulgating the Disinfectant/Disinfection By-Products Rule and the Enhanced Surface Water Treatment Rule. The first phase of the D/DBP Rule is proposed to take effect in late 1998, as is an interim ESWTR. More stringent versions of both rules are proposed to follow in 2002. This subject is discussed in more detail in Chapter 3.

Clean Water Act Reauthorization. The Clean Water Act, administered by EPA in coordination with the states, is the chief federal regulatory statute controlling point and nonpoint source discharges to surface water. The CWA additionally provides federal authority for wetlands protection and regulation of dredging and filling. CWA reauthorization proposals were heard in the 103rd and 104th Congresses, but no legislation was enacted. The act's broad scope complicates reauthorization.

Some of the topics covered in reauthorization proposals have included funding levels for the SRF program; changes to the water quality standard setting process (such as special recognition of environmental benefits of discharging treated wastewater to streams in arid areas); recognition of impacts of introduced aquatic species on species of concern in the water quality standard setting process; Good Samaritan liability provisions for remediation measures at abandoned mines; new programs for nonpoint source management and regulation of combined sanitary/stormwater sewers; new stormwater management requirements for municipalities; recognition of state primacy in water quantity allocation; and expanded statutory treatment of wetlands protection.

Endangered Species Act Reauthorization. As with the CWA, ESA reauthorization proposals were heard in past congresses, but no legislation has been enacted. Some proposed changes included amending the act to focus on preserving ecological communities rather than on preserving a single species or subspecies, providing for stakeholder participation and peer-reviewed science in the species listing process, addressing management of candidate species, streamlining the Section 7 consultation process, quantifying recovery plan objectives, and providing assurances and regulatory relief for nonfederal landowners.

Reclamation, Recycling, and Water Conservation Act of 1996. This act amended Title 16 of PL 102-575 by authorizing federal cost-sharing in additional wastewater recycling projects. (PL 102-575 had authorized federal cost-sharing in specified recycling projects.) The additional California projects are shown below, along with the nonfederal sponsors identified in the statute.

- North San Diego County area water recycling project (San Elijo Joint Powers Authority, Leucadia County Water District, City of Carlsbad, Olivenhain Municipal Water District)
- Calleguas Municipal Water District recycling project (CMWD)
- Watsonville area water recycling project (City of Watsonville)
- Pasadena reclaimed water project (City of Pasadena)
- Phase 1 of the Orange County regional water reclamation project (Orange County Water District and County Sanitation Districts of Orange County)
- Hi-Desert Water District wastewater collection and reuse facility (HDWD)
- Mission Basin brackish groundwater desalting demonstration project (City of Oceanside)
- Effluent treatment for the Sanitation Districts of Los Angeles County with the City of Long Beach (Water Replenishment District of Southern California, OCWD)
- San Joaquin area water recycling and reuse project (San Joaquin County, City of Tracy)

Federal cost-sharing in these projects is authorized at a maximum of 25 percent for project construction and federal contributions for each project are capped at $20 million. Funds are not to be appropriated for project construction until after a feasibility study and cost-sharing agreement are completed. Federal cost-sharing may not be used for operations and maintenance.

The act also authorizes the Department of Interior to cost-share up to 50 percent (planning and

design) in a Long Beach desalination research and development project. Local sponsors are the City of Long Beach, Central Basin Municipal Water District, and MWDSC.

Water Desalination Act of 1996. This act authorizes DOI to cost-share in non-federal desalting projects at levels of 25 percent or 50 percent (for projects which are not otherwise feasible unless a federal contribution is provided). Cost-shared actions can be research, studies, demonstration projects, or development projects. The authorization provides $5 million per year for fiscal years 1997 through 2002 for research and studies, and $25 million per year for demonstration and development projects. The act requires DOI to investigate at least three different types of desalting technology and to report research findings to Congress.

National Invasive Species Act of 1996 (PL 104-332). NISA reauthorized and amended the Nonindigenous Aquatic Nuisance and Prevention and Control Act of 1990. The purpose of the legislation was to provide tools for management and control of aquatic nuisance species, such as zebra mussels. NISA reauthorized a mandatory ballast management program for the Great Lakes, an area already heavily infested with zebra mussels, and created an enforceable national ballast management program for all U.S. coastal regions. The act requires detailed reporting on ballast exchange by cargo vessels. Ship ballast water has been identified as a likely mode of introduction for many of the nonindigenous invertebrates identified in the Bay-Delta, now home to at least 150 introduced plant and animal species.

State and Federal Programmatic Actions

SWP Monterey Agreement Contract Amendments

The Monterey Agreement among the Department and SWP water contractors was signed in December 1994. This agreement set forth principles for making changes in SWP water supply contracts, which would then be implemented by an amendment (Monterey amendment) to each contractor's SWP contract. The amendment has been offered to all SWP contractors. Those contractors that sign the amendment will receive the benefits of it, while those that do not will have their water supply contracts administered such that they will be unaffected by the amendment. As of December 1997, 26 of the 29 contractors had signed the amendment.

The zebra mussel has caused millions of dollars in increased operations and maintenance costs to Great Lakes water users. Preventing the mussels' spread is a priority in invasive species management.

Changes to SWP Water Allocation Rules. The amendment states that during drought years project supplies are to be allocated proportionately on the basis of contractors' entitlements. The amendment allocates water to urban and agricultural purposes on equal basis, deleting a previous initial supply reduction to agricultural contractors.

Permanent Sales of Entitlement. The amendment provides for transfer of up to 175 taf of annual entitlement from agricultural use. The first transfer made was relinquishment of 45 taf of annual entitlement (40,670 acre-feet from Kern County Water Agency, 4,330 acre-feet from Dudley Ridge Water District) back to the SWP, as part of the transfer of the Kern Water Bank property to these agencies. This relinquishment reduces the total SWP contractual commitment. The amendment provides for an additional 130 taf/yr of existing agricultural entitlement to be sold on a permanent basis to urban contractors, on a willing buyer-willing seller basis. As of April 1997, 25 taf/yr of KCWA entitlement had been purchased by Mojave Water Agency for recharge in Mojave's groundwater basin. Other potential permanent transfers are being discussed.

Storing Water Outside a Contractor's Service Area and Transfers of Non-Project Water. While some of the amendment's benefits help the larger SWP

contractors, the ability to store water outside a contractor's service area is a significant benefit to the smaller contractors. Many SWP urban contractors do not have significant water storage opportunities in their service areas. This provision of the Monterey amendment allows a contractor to store water in another agency's reservoir or groundwater basin. Examples include water storage programs with Semitropic Water Storage District (a member agency of KWCA).

Several water exchanges are moving forward following approval of the Monterey amendment. Dudley Ridge Water District has entered into an exchange agreement with San Gabriel Valley Municipal Water District. Solano County Water Agency has developed an exchange program with MWA whereby SCWA provides a portion of its entitlement in wetter years in return for a lesser amount of water in dry years. While these exchanges cannot be directly attributed to the amendment, the amendment facilitates their implementation.

Finally, the amendment provides a mechanism for using SWP facilities to transport non-project water for SWP water contractors. (The Department uses other contractual arrangements for wheeling water for the CVP and for other non-SWP water users.)

Annual Turnback Pool. Prior to the amendment, water allocated to contractors that was not used during a year would revert to the SWP at the end of the year. No compensation was provided to the contractor for this water, and no other contractors could make use of these supplies during the year. The turnback pool is an internal SWP mechanism which provides for pooling potentially unused supplies early in the year for purchase by other SWP contractors at a set price. The pool was not intended as a water market, but rather as an incentive to return unneeded water early in the year for reallocation among SWP contractors on a willing-buyer basis. The turnback pool operated successfully on a trial basis during 1996, when more than 200 taf were reallocated. If neither the SWP nor individual SWP contractors wish to use water placed into the pool, that water may then be sold to entities that are not SWP contractors.

Other Operational Changes. The amendment established a procedure to transfer ownership of the Department's KWB property to KCWA and Dudley Ridge Water District. The amendment allows contractors repaying costs of constructing the Castaic and Perris terminal reservoirs to increase their control and management of a portion of the storage capacity of each reservoir to optimize the operation of local and SWP facilities. This is expected, for example, to improve drought year supplies for MWDSC, Castaic Lake Water Agency, and Ventura County Flood Control and Water Conservation District.

CVPIA Implementation

CVPIA made significant changes to the CVP's legislative authorization, amending the project's purposes to place fish and wildlife mitigation and restoration on a par with water supply, and to place fish and wildlife enhancement on a par with power generation. Key areas of CVPIA implementation are summarized below. A more detailed summary of the act is provided in Appendix 2A. USBR and USFWS released a draft programmatic EIS on CVPIA implementation for public review in November 1997. The draft PEIS describes, among other things, estimated water supply impacts of federal implementation of the act, and illustrates the consequences of different alternatives for fish and wildlife supplemental water acquisition. A final EIS is scheduled to be released in 1999.

Renewal of CVP Water Service Contracts. CVPIA prohibited execution of new CVP water service contracts (with minor exceptions), except for fish and wildlife purposes, until all of the many environmental restoration actions specified in the statute had been completed. The act also provided that existing long-term water service contracts be renewed for 25-year terms, as opposed to their previous 40-year terms. Only interim renewals (not more than three years) are allowed until the PEIS required by the act is completed. Beginning in October 1997, most existing long term contracts are subject to a monetary hammer clause encouraging early renewal. Renewed contracts will incorporate new provisions required by CVPIA, such as tiered water pricing. Since USBR has not completed the PEIS, all contract renewals to date have been interim renewals. USBR has had more than 60 interim contract renewals from the date of enactment through 1996, representing over 1 maf/yr of supply.

Transfers of Project Water. CVPIA authorized transfer of project water outside the CVP service area, subject to many conditions, including a right of first refusal by entities within the service area. Several conditions, including right of first refusal by entities within the service area, terminate in 1999. Transfers must be consistent with State law, be approved by USBR, and be approved by the contracting water district if the transfer involves more than 20 percent of its long-term

CVPIA's Dedicated Water

Section 3406(b)(2) describes the dedicated water as follows:

Upon enactment of this title dedicate and manage annually 800,000 acre-feet of Central Valley Project yield for the primary purpose of implementing the fish, wildlife, and habitat restoration purposes and measures authorized by this title; to assist the State of California in its efforts to protect the waters of the San Francisco Bay-San Joaquin Delta Estuary; and to help meet such obligations as may be legally imposed upon the Central Valley Project under State or Federal law following the date of enactment of this title, including but not limited to additional obligations under the federal Endangered Species Act. For the purpose of this section, the term "Central Valley Project yield" means the delivery capability of the Central Valley Project during the 1928-1934 drought period after fishery, water quality, and other flow and operational requirements imposed by terms and conditions existing in licenses, permits, and other agreements pertaining to the Central Valley Project under applicable State or Federal law existing at the time of enactment of this title have been met.

contract supply. USBR has published interim guidelines for administration of this provision, pending formal promulgation of rules and regulations. As of this writing, no out of service area transfers have been approved or implemented.

Fish and Wildlife Restoration Actions. One of the most controversial elements of CVPIA implementation has been management of the 800 taf/yr of CVP yield (see sidebar) dedicated by the act to fishery restoration purposes. This water is available for use on CVP controlled streams (river reaches downstream from the project's major storage facilities on the Sacramento, American, and Stanislaus Rivers) and in the Bay-Delta.

The ambiguity of the statutory language and the use of dedicated water in the Bay-Delta Accord have generated many questions, including whether the water may be exported from the Delta after it has been used for instream flow needs in upstream rivers, and if the water may be used for Bay-Delta purposes beyond Bay-Delta Accord requirements. Initially, USBR and USFWS attempted to develop guidelines or criteria for its management. Subsequent to CALFED's creation, the CALFED Operations Group became a forum for attempting to resolve dedicated water. In November 1997, DOI released its final administrative proposal on management of the dedicated water issues. The proposal's release was subsequently challenged in legal action filed by some CVP water contractors.

A main purpose of the dedicated water is meeting the act's goal of doubling natural production of Central Valley anadromous fish populations from their average 1967-91 levels by year 2002. Release of water to the San Joaquin River from Friant Dam is excluded from this program. CVPIA authorizes USBR and USFWS to acquire additional, supplemental water from willing sellers to help achieve the doubling goal. Details of supplemental water acquisition are presented

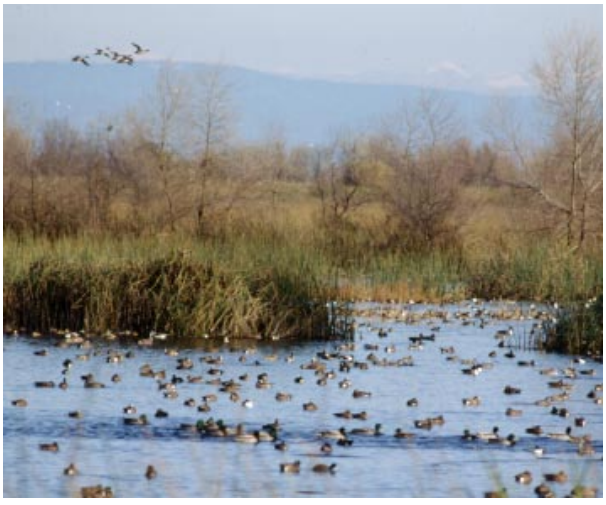
Looking at the upstream face of Shasta Dam, with the temperature control device at the center of the photo. At this high reservoir level, only a small portion of the TCD is visible. The structure is bolted to the face of the dam, covering the powerplant intakes.

CVPIA Waterfowl Habitat Provisions

Most CVPIA environmental restoration measures address fishery needs. Several provisions specifically address restoring and enhancing waterfowl habitat. The act authorizes a 10-year voluntary incentive program for farmers to flood their fields to create waterfowl habitat, and directs USBR and USFWS to prepare reports on the water supply reliability of private wildlife refuges and on water needs for 120,000 acres of additional wetlands identified in a plan by the Central Valley Habitat Joint Venture (see Chapter 4). CVPIA's major waterfowl habitat provision is a requirement that, by 2002, USBR and USFWS must provide specified levels of water supply for certain federal, State, and private refuges. Part of this water supply is to come from reallocating existing CVP supplies, and part from acquisition from willing sellers. Requirements for specific refuges are summarized in Chapter 4. The act also authorizes DOI to construct or acquire conveyance facilities or wells needed to supply water to the refuges.

in Chapter 6. CVPIA further allocates additional CVP water supply for instream use in the Trinity River, reducing the quantity of water which the project could otherwise divert, by requiring that an instream flow of 340 taf/yr be maintained through water year 1996 while USFWS finishes a long-term instream flow study. As discussed in Chapter 7, USFWS now recommends instream flows much greater than 340 taf/yr.

CVPIA enumerates specific physical restoration measures that the federal government must complete for fishery and waterfowl habitat restoration. The largest completed measures are a temperature control device at Shasta Dam and a research pumping plant at Red Bluff Diversion Dam. CVPIA allocated part of the costs of some restoration measures to the State of California; the remaining costs are being paid by federal taxpayers and by CVP water and power contractors. Some of the smaller restoration actions include individual fish-screening projects that USBR and USFWS are cost-sharing with local agencies under the anadromous fish screening program. Examples of these projects are described in Chapter 8.



Part of the CVP water supply reallocated by CVPIA to environmental purposes is used to provide a firm water supply for specified federal, State, and private wildlife refuges. The Secretary of Interior is additionally directed to acquire supplemental water supply to meet the full habitat needs of these refuges.

CVPIA required USBR to impose a surcharge on CVP water and power contracts for deposit into a Restoration Fund created by the act. Monies deposited into the fund are appropriated by Congress to help fund CVPIA environmental restoration actions. The act authorizes appropriation of up to $50 million (1992 dollars) per year for the restoration actions. Annual deposits into the fund vary with water and power sales. CVPIA environmental restoration actions can be funded from the general federal treasury, as well as from the Restoration Fund.

Land Retirement Program. CVPIA authorized DOI to carry out an agricultural land retirement program for lands receiving CVP water. The statute specified that targeted lands be lands that "are no longer suitable for sustained agricultural production because of permanent damage resulting from severe drainage or agricultural wastewater management problems, groundwater withdrawals, or other causes." The retirement of these lands would result in improved water conservation in a contracting district, or would help implement recommendations of the San Joaquin Valley Drainage Program's 1990 report. USBR published interim guidelines for administration of a pilot program, pending formal promulgation of rules and regulations. The federal guidelines were developed in coordination with a state land retirement program established in 1992 under Water Code Section 14902 et seq. The State statute limited the retirement program to drainage-impaired lands. The State land retirement program has never been funded, and thus no State ac-

quisitions have been made. By November 1997, the federal land retirement program had made one purchase—about 600 acres of drainage-impaired land in Westlands Water District that will be managed for wildlife habitat. Recently, USBR solicited proposals from landowners wishing to participate in the retirement program and received offers to sell lands amounting to 31,000 acres.

CVP Reform Act Bill and CVPIA Administration. In 1995, the CVP Water Association sponsored introduction of HR 1906, the Central Valley Project Reform Act of 1995, a bill which would have made extensive amendments to CVPIA. That bill was opposed by the federal administration and did not pass out of the House. DOI took up CVPIA implementation issues raised by the water users in a 1996 administrative process that produced a series of concept papers outlining issues with federal implementation of CVPIA.

USBR initially prepared interim guidelines on many provisions of the act, with the intent that the guidelines would remain in place until rules and regulations were promulgated for sections of CVPIA involving discretionary actions by the federal government. In some cases, the concept papers produced in the administrative process attempt to clarify or augment the interim guidelines. USBR has not formally promulgated rules and regulations for any CVPIA provision.

Other Programs and Reports. USBR has developed criteria for evaluating water conservation plans of CVP contractors, as required by the act (see Chapter 4), and has been reviewing contractors' plans for compliance with the criteria. As of March 1998, over 70 water agencies had submitted plans pursuant to the criteria. The Department, DFG, USBR, and USFWS negotiated a master State-federal cost-sharing agreement for environmental restoration actions whose costs the act allocated in part to California. Funding for the State's share of those costs was provided by voter approval of Proposition 204.

From a water supply standpoint, certain CVPIA-mandated reports are of special interest. USFWS has prepared several draft documents relating to estimated Central Valley environmental water needs and water management actions for the AFRP. The most recent draft of the AFRP was published in May 1997. In 1995, USBR released an appraisal-level least-cost CVP yield increase plan, required by the act to identify options for replacing the water supply dedicated to environmental purposes. Although the act directed that the plan be prepared, USBR was not required to implement it.

Title Transfer of Reclamation Projects

In the 1990s, there was increasing interest in title transfer of federal water projects (or components of projects) to nonfederal ownership. Generally, transfer proposals can be divided into three broad categories—USBR's westwide program for small uncomplicated projects, general congressional action dealing with principles for transfer of certain types of projects, and water user-initiated transfers of specific projects. There was additionally a brief period of State-federal negotiations on title transfer of the CVP. Transfer of a federal project or its components to nonfederal ownership would normally require congressional authorization.

In 1995, USBR announced that it was initiating a westwide program to transfer title of uncomplicated reclamation projects. Uncomplicated projects were defined as small, single-purpose projects—typically distribution and conveyance systems (without hydropower or conservation storage components)—which could easily be transferred to project beneficiaries. The projects would have no competing interests, would not be hydrologically integrated with other projects, and would have simple financial arrangements. Transfer of a distribution system would not necessarily "defederalize" a project's service area. For example, a local agency could acquire title to a distribution system but still hold a water service contract with USBR for the water supply made available for diversion. In this instance, the service area would probably continue to be subject to existing federal requirements such as Reclamation Reform Act acreage limitations and water conservation regulations. USBR indicated that it will not entertain transfers of large projects in their entirety under this program. Transfer of isolated elements of such projects can be considered under the program. One transfer being negotiated under the administrative program is that of the Contra Costa Canal, a CVP facility, to Contra Costa Water District. If USBR and CCWD can successfully negotiate terms and conditions, they would then seek congressional authorization for the transfer. Other California reclamation facilities considered for transfer under the administrative program include the CVP's Clear Creek Community Services District distribution system. Title to the San Diego Aqueduct, a conveyance facility origi-

Negotiations have been in progress on transferring title of the Contra Costa Canal from USBR to CCWD. The transfer would include the 48-mile-long canal, two regulating reservoirs, and associated pumping plants. The canal's maximum capacity is 350 cfs, decreasing to 22 cfs at its terminus.

nally constructed under Department of Defense authorization and subsequently turned over to USBR to manage, was transferred to nonfederal entities in 1997.

Legislation was introduced in the 104th Congress that would have directed DOI to transfer title of reclamation projects whose construction costs had been repaid by the project beneficiaries. This legislation was not enacted. There were several proposals for transfers of individual projects during the 104th Congress, none of which were approved.

In 1992, California and the United States signed a memorandum of agreement on a process to transfer title of the CVP to California. The federal government subsequently declined to pursue transfer negotiations due to a change in the federal administration and 1992 enactment of CVPIA. In 1995, local agencies that operate and maintain much of the CVP system formed a joint powers authority to explore transferring title of the CVP to the local agencies. The CVP Authority proposed to introduce title transfer legislation in the 104th Congress, but legislation was not introduced. Solano Project water users also pursued transfer legislation in the 104th Congress. That effort was put on hold while an adjudication of Putah Creek water rights proceeded.

FERC Relicensing

The Federal Energy Regulatory Commission administers a program of licensing nonfederal hydroelectric power plants. FERC licenses establish conditions on the owners' operation of their plants; typical conditions include instream flow requirements and other fishery protection measures. Licenses for many California hydropower plants will be coming up for renewal in the near future. FERC has begun to schedule regulatory activities for plants with licenses expiring in 2000 to 2010 (Table 2-6). The relicensing process affords resource agencies and individuals the opportunity to seek changes in instream flow requirements, such as those suggested in CVPIA's draft AFRP. Hydropower generation is a nonconsumptive water use, but changes in the amount and timing of water diverted for power generation can affect other uses downstream. The impact of deregulation of the electric power industry on relicensing decisions is uncertain. Current owners of some generating facilities (especially smaller plants) may sell their generation assets in response to deregulation.

Water supply impacts of relicensing are difficult to quantify, in part because impacts are site-specific. Some plants subject to relicensing, for example, currently have no bypass flow requirements. It is likely that relicensing would establish bypass flows at these sites. Other plants subject to relicensing already have substantial bypass flows, and it is not clear what changes relicensing would bring.

Recent ESA Listings

Since publication of Bulletin 160-93, there has been action on federal listing of several fish species having statewide water management significance. In August 1997, the National Marine Fisheries Service listed two coastal steelhead populations as threatened (from the Russian River south to Soquel Creek, and

TABLE 2-6

California Hydropower Projects - License Years 2000 - 2010
(projects over 1,000 kW)

License Expiration Date	*Project*	*Stream*	*Licensee*	*Capacity (1,000 kW)*
June 2000	Lower Tule	Middle Fork Tule River	Southern California Edison	2.0
September 2000	Hat Creek No. 1 & 2	Hat Creek & Pit River	Pacific Gas & Electric	20.0
February 2002	El Dorado	South Fork American River	PG&E	20.0
April 2003	San Gorgonio No. 1 & 2	San Gorgonio Creek	SCE	2.3
August 2003	Vermillion Valley	Mono Creek	SCE	N/A
September 2003	Poe	North Fork Feather River	PG&E	142.8
October 2003	Pit	Pit River	PG&E	317.0
April 2004	Santa Felicia Reservoir	Piru Creek Santa Clara River	United Water Conservation District	1.4
October 2004	Upper North Fork Feather River	North Fork Feather River	PG&E	342.0
December 2004	Donnells & Beardsley	Middle Fork Stanislaus River	Oakdale & South San Joaquin Irrigation Districts	64.0
December 2004	Tulloch	Stanislaus River	OID and SSJID	17.1
December 2004	Stanislaus - Spring Gap	South Fork Stanislaus River	PG&E	175.8
February 2005	Borel	Kern River	SCE	9.2
March 2005	Portal	Rancheria Creek Big Creek	SCE	10.0
April 2005	Kern Canyon	Kern River	PG&E	11.5
February 2006	Klamath	Klamath River	Pacificorp	231.0
January 2007	Feather River	Feather River	DWR	844.0
March 2007	Kilarc & Cow Creek	Old Cow Creek & Cow Creek	PG&E	8.9
July 2007	Upper American River	South Fork American River	SMUD	722.3
July 2007	Chili Bar	South Fork American River	PG&E	7.0
November 2007	Mammoth Pool	San Joaquin River	SCE	181.0
February 2009	Big Creek No. 2A & 8	South Fork San Joaquin River	SCE	480.1
February 2009	Big Creek 3	San Joaquin River	SCE	177.5
February 2009	Big Creek No. 1 & 2	Big Creek & San Joaquin River	SCE	225.9
March 2009	South Fork	Kelly Ridge Canal	Oroville-Wyandotte Irrigation District	104.1
April 2009	Santa Ana No. 3	Santa Ana River	SCE	1.5

from the Pajaro River south to the Santa Maria River), and one population as endangered (from the Santa Maria River south to Malibu Creek). NMFS deferred listing decisions for six months for other California populations—from the Elk River in Oregon to the Trinity River in California, from Redwood Creek to the Gualala River, and in the Central Valley—due to scientific disagreement about the sufficiency and accuracy of the data available for listing determinations. In March 1998, NMFS listed the Central Valley population as threatened, and deferred listing of the two north coast populations in favor of working with California and Oregon on state conservation plans.

Also in 1997, NMFS listed the Southern Oregon/Northern California coast evolutionarily significant unit of coho salmon as threatened. In 1996, NMFS listed coho salmon in the central coast ESU (from Punta Gorda in Humboldt County south to the San Lorenzo River) as threatened.

In 1998, NMFS proposed several runs of chinook salmon for listing—the spring-run in the Central Valley ESU as endangered, the fall and late-fall runs in the Central Valley ESU as threatened, and the spring and fall runs in the Oregon/California coastal ESU as threatened. NMFS expects to make its decision on listing in 1999. The spring-run chinook salmon has been listed as a candidate species under the California ESA.

USFWS proposed in 1994 to list a resident Delta fish species, the Sacramento River splittail, but a congressional moratorium on listing of new species prevented USFWS from working on the proposal until 1996. USFWS again proposed to list splittail in 1996, but received significant public comments on new scientific information for splittail. As of July 1998, the extended public comment period is just ending. USFWS is expected to make a decision after that time.

USFWS has also listed or proposed for listing species whose limited range would result in localized water management impacts. For example, the red legged frog, found primarily in the Central Coast area, was listed as threatened in 1996. Another example is the Santa Ana sucker, found in the Santa Ana River, proposed for listing in 1998.

San Francisco Bay and Sacramento-San Joaquin River Delta

Bay-Delta Accord and CALFED

Representatives from the California Water Policy Council, created to coordinate activities related to State long-term water policy, and the Federal Ecosystem Directorate, created to coordinate actions of federal agencies involved in Delta programs, signed a Framework Agreement for the Bay-Delta estuary in June 1994. Working together, these agencies are known as CALFED. The Framework Agreement improved coordination and communication between State and federal agencies with resource management responsibilities in the estuary. It covered the water quality standards setting process; coordinated water project operations with requirements of water quality standards, endangered species laws, and CVPIA; and provided for cooperation in planning long-term solutions to problems affecting the estuary's major public values.

In December 1994 State and federal agencies, working with stakeholders, reached agreement on the "Principles for Agreement on Bay-Delta Standards Between the State of California and the Federal Government" (commonly referred to as the Bay-Delta Accord) that would remain in effect for three years. Provisions of the Bay-Delta Accord covered water quality standard setting and water project operational constraints, ESA implementation and use of real-time monitoring data, and improvement of conditions not directly related to Delta outflow. Parties to the accord committed to fund "non-flow Category III" measures at $60 million per year for the agreement's three-year term. The accord was subsequently extended for a fourth year. An Operations Group composed of representatives from the State and federal water projects and the other CALFED agencies was established to coordinate project operations. Stakeholders from water agencies and environmental and fishery groups participate in Operations Group meetings.

Water Quality Standard Setting. SWRCB adopted a water quality control plan for the Bay-Delta in May 1995, incorporating agreements reached in the accord. In June 1995, SWRCB adopted Order WR 95-6, an interim order amending terms and conditions of SWRCB's D-1485 and the SWP's and CVP's water right permits to resolve inconsistencies with D-1485 requirements and the projects' voluntary implementation of accord standards. The interim order will expire when a water right decision allocating final responsibilities for meeting the 1995 objectives is adopted, or on December 31, 1998, whichever comes first. SWRCB released a revised draft EIR for implementing the water quality control plan in 1998, and intends to issue a water right decision implementing the order by the end of 1998. The DEIR has eight flow alternatives:

(1) SWP and CVP Responsible for D-1485 Flow Objectives.
(2) SWP and CVP Responsible for 1995 Bay-Delta Water Quality Control Plan Flow Objectives.
(3) Water Right Priority Alternative (The CVP's Friant Unit is assumed to be an in-basin project.)
(4) Water Right Priority Alternative (The CVP's Friant Unit is assumed to be an export project.)
(5) Watershed Alternative–Monthly average flow requirements are established for major watersheds based on Delta outflow and Vernalis flow objectives and the watersheds' average unimpaired flow. The parties responsible for providing the required flows are water users with storage in foothill reservoirs that control downstream flow to the Delta, and water users with upstream reservoirs that have a cumulative capacity of at least 100 taf who use water primarily for consumptive uses.
(6) Recirculation Alternative–USBR is required to make releases from the Delta-Mendota Canal to meet the Vernalis flow objectives.
(7) San Joaquin Basin Negotiated Agreement–San Joaquin Basin water right holders' responsibility to meet the plan objectives is based on an agreement titled "Letter of Intent among Export Interests and San Joaquin River Interests to Resolve San Joaquin River Issues Related to Protection of Bay-Delta Environmental Resources."
(8) San Joaquin Basin Negotiated Agreement–Vernalis flow objectives are replaced by target flows contained in the agreement.

CALFED Long-Term Solution-Finding Process for Bay-Delta. The June 1994 Framework Agreement called for a State-federal process to develop long-term solutions to Bay-Delta problems related to fish and wildlife, water supply reliability, natural disasters, and water quality. The CALFED program is managed by an interagency team under the policy direction of CALFED member agencies, with public input provided by the Bay-Delta Advisory Council. BDAC is a 31-member advisory panel representing California's agricultural, environmental, urban, business, fishing, and other interests who have a stake in the long term solution to Bay-Delta problems.

The CALFED program's first phase identified problems in and goals for the Bay-Delta, and developed a range of alternatives for long-term solutions. This phase concluded with a September 1996 report identifying three broad solutions, each of which included a range of water storage options, a system for conveying water, and some programs that were common to all alternatives. The second phase consisted of preparing a programmatic EIR/EIS covering three main alternatives for conveyance of water across the Delta—an existing system alternative, a through-Delta alternative, and a dual Delta conveyance alternative. A first public review draft of the PEIR/PEIS was released in March 1998. CALFED expects to issue a second draft PEIR/PEIS by the end of 1998. The revised draft would identify CALFED's draft preferred alternative.

The third phase would involve staged implemen-

CALFED's Ecosystem Restoration Program calls for extensive creation of new habitat in the Delta. Construction of setback levees would allow restoration of riparian and riverine aquatic habitats, benefitting fish and wildlife.

tation of the preferred alternative over a time period of several decades and will require site-specific compliance with NEPA and CEQA. Current plans are for an initial implementation period of 7 to 10 years, during which only common program elements would be implemented (water conservation measures, ecosystem restoration, levee improvements). Any conveyance or storage facilities would be constructed in a later phase of implementation.

ESA Administration. The Bay-Delta Accord established several principles governing ESA administration in the Bay-Delta during the agreement's term.

- The accord is intended to improve habitat conditions in the Bay-Delta to avoid the need for additional species listings during the agreement's term. If additional listings do become necessary, the federal government will acquire any additional water supply needed for those species by buying water from willing sellers.
- There is intended to be no additional water cost to the CVP and SWP resulting from compliance with biological opinion incidental take provisions for presently listed species. The CALFED Operations Group is to develop operational flexibility by adjusting export limits.
- Real-time monitoring is to be used to the extent possible to make decisions regarding operational flexibility. CALFED commits to devote significant resources to implement real-time monitoring.

An aerial view of the Montezuma Slough salinity control structure. The structure includes three 36-foot wide radial gates, a 66-foot wide barge access, and a boat lock.

Suisun Marsh

SWRCB's D-1485 required USBR and the Department to develop a plan to protect the Suisun Marsh. The Suisun Marsh Preservation and Restoration Act of 1979 authorized the DOI to enter into an agreement with California for cost-sharing in activities to protect the marsh's fish and wildlife resources. A plan was subsequently developed and initial water supply distribution systems called for in the plan were completed in 1981.

In 1986 PL 99-546 authorized the federal government to contract with Suisun Resource Conservation District, DFG, and the Department for mitigating effects of the SWP, CVP, and other upstream diversions on marsh water quality. The agreement, approved in March 1987, described proposed facilities to be constructed, a construction schedule, cost-sharing responsibilities, water quality standards, soil salinity, water quality monitoring, and purchase of land to mitigate the impacts of the Suisun Marsh facilities themselves. As provided by the agreement, a salinity control structure on Montezuma Slough was completed in 1989. The structure has effectively reduced salinity in Montezuma Slough and eastern regions of the marsh, and to a lesser degree, in most of the western regions of the marsh.

Because of the effectiveness of the salinity control structure and the increased Delta outflows called for in SWRCB's Order WR 95-6, parties to the 1987 Suisun Marsh Preservation Agreement are amending the agreement to focus on funding water management activities instead of constructing the large-scale facilities initially planned. Activities such as improving discharge facilities, screening portable pumps, employing a water manager, and constructing joint-use water management facilities among landowners will enable landowners to effectively use water from marsh sloughs.

Delta Protection Commission

The Delta Protection Act of 1992 established the Delta Protection Commission and charged it with preparing a plan for land uses within the primary zone of the Delta, and with working with local governments to ensure that their general plans are brought into conformance with the Commission's plan. Delta counties—including Solano, Yolo, Sacramento, San Joaquin, and Contra Costa—are required to comply with findings of the plan. In February 1995, the Commission adopted the *Land Use and Resource*

Management Plan for the Primary Zone of the Delta (Delta Plan). The major goals of the Delta Plan include the following:

- Preserve and protect the natural resources of the Delta, including soils.
- Promote protection of remnants of riparian habitat.
- Promote seasonal flooding and agricultural practices to maximize wildlife use.
- Promote levee maintenance and rehabilitation to preserve land areas and channel configurations in the Delta.
- Protect the Delta from excessive construction of utilities and other infrastructure. Where construction of new infrastructure is appropriate, minimize the impacts of new construction on levees, wildlife, and agriculture.
- Protect the unique character and qualities of the primary zone by preserving its cultural heritage and strong agricultural base. Encourage residential, commercial, and industrial development in existing developed areas.
- Support long-term viability of commercial agriculture and discourage inappropriate development of agricultural lands.
- Protect long-term water quality in the Delta.
- Promote continued recreational use of the land and waters of the Delta; ensure that facilities that allow such uses are constructed and maintained; protect landowners from unauthorized recreational uses on private lands; and maximize dwindling public funds for recreation by promoting public-private partnerships and multiple use of Delta lands.
- Support the improvement and long-term maintenance of Delta levees by coordinating permit reviews and guidelines for levee maintenance; develop a long-term funding program for levee maintenance; protect levees in emergency situations; and give levee rehabilitation and maintenance priority over other uses of levee areas.

As originally authorized, the Delta Protection Commission was to expire in January 1997. Its expiration date was extended to January 1, 1999. The Commission is currently studying existing recreational uses in the Delta in conjunction with the Department of Boating and Waterways and the Department of Parks and Recreation. The Commission continues to monitor proposed land use changes in the Delta.

San Francisco Estuary Project

The San Francisco Estuary Project, begun in 1987, is a federal-State partnership established under Clean Water Act authority to develop a plan for protecting and restoring the estuary while maintaining its beneficial uses. The project, jointly sponsored by EPA and by the State, is financed by federal appropriations and matching funds from State and local agencies.

In 1993, the SFEP's Comprehensive Conservation and Management Plan was completed and signed by the State and federal governments. The CCMP contained 145 specific action items to protect and restore the estuary, classified into the following programs: aquatic resources, wildlife, wetlands management, water use, pollution prevention and reduction, dredging and waterway modification, land use, public involvement and education, and research and monitoring. Since no specific funding exists for implementing these action items, progress has continued under existing federal, State, and local programs. A 1996 SFEP progress report on CCMP implementation identified ten priorities to be implemented over the next five years:

(1) Expand, restore, and protect Bay-Delta wetlands.
(2) Integrate and improve regulatory and scientific monitoring programs.
(3) Create economic incentives that encourage local governments to implement measures to protect and enhance the estuary.
(4) Improve management and control of urban runoff.
(5) Prepare and implement watershed management plans throughout the estuary.
(6) Reduce and control introduction of exotic species.
(7) Build awareness about CCMP implementation.
(8) Increase public awareness about the estuary's natural resources and the need to protect them.
(9) Implement a regional monitoring program.
(10) Work with CALFED and others to address program priorities.

Coordinated Operation Agreement Renegotiation

In 1986, the Department and USBR signed a Coordinated Operation Agreement obligating the CVP and the SWP to coordinate their operations to meet D-1485 standards. The agreement authorizes DOI to operate the CVP in coordination with the SWP to meet State water quality standards for the Bay-Delta (unless DOI determines such operation to be inconsistent with Congressional directives), and provides a formula for

sharing the obligation to provide water to meet water quality standards and other in-basin uses. It sets forth the basis for CVP and SWP operation to ensure that each project receives an equitable share of Central Valley runoff and guarantees that the two systems will operate more efficiently during periods of drought than they would if operated independently. Under the COA, the USBR also agreed to meet its share of future water quality standards established by SWRCB.

Article 14 of the COA provides for periodic review of project operation and of the COA, and for future adjustments to the sharing formula if assumed conditions used to calculate the sharing formula change. Since COA execution, biological opinions for winter-run chinook salmon and Delta smelt have imposed new operational constraints on both the CVP and the SWP. In addition, the Bay-Delta Accord has established standards which the two projects are voluntarily meeting, pending implementation of the standards through SWRCB's water rights proceedings. As a result of these changes, the Department and USBR have begun a review of the sharing formula.

Interstate Issues

California receives most of its water supply from intrastate rivers and groundwater basins. The Colorado River, shared among seven states, contributes a substantial water supply to Southern California, and other smaller interstate rivers are locally important sources. The status of apportionment actions on rivers with long-standing interstate issues is discussed below. There is currently no significant activity on interstate groundwater basins. Within the last decade, there had been concerns in California about proposed large-scale groundwater development projects in northern Nevada that could affect interstate basins, but these projects have not been implemented.

USBR's dam on Lake Tahoe regulates releases for downstream water users in Nevada.

Truckee-Carson River System

The Truckee-Carson-Pyramid Lake Water Rights Settlement Act (Title II of PL No. 101-618) settled several water rights disputes affecting the waters of Lake Tahoe, the Truckee River, and the Carson River. Of most importance to California, the act made an interstate apportionment of these waters between the States of California and Nevada. (It was the first Congressional apportionment since the Boulder Canyon Project Act of 1928.) The act addresses several other issues, including settlement of water supply disputes between the Pyramid Lake Paiute Tribe of Indians and other users of the Truckee and Carson Rivers. The act also addresses environmental concerns, such as recovery of listed fish species in Pyramid Lake.

Many of the act's provisions—including the interstate apportionment between California and Nevada—will not take effect until several conditions have been satisfied, including dismissal of specified lawsuits and negotiation and adoption of a Truckee River Operating Agreement. The act requires that a TROA be negotiated among DOI and the States of California and Nevada, after consultation with other parties as may be designated by DOI or by the two states. The TROA addresses interstate water allocation and implements an agreement between Sierra Pacific Power Company and the United States which provides for storing water in upstream reservoirs for Pyramid Lake fish and for emergency drought water supplies for the Reno-Sparks area. TROA negotiation has been ongoing since 1991. A draft TROA is being analyzed in an EIS/EIR prepared by DOI. The Department is the State lead agency for CEQA compliance. The draft EIS/EIR was released for public review in 1998 and is expected to be completed in 1999.

Walker River

There are currently no significant interstate actions pending on the Walker River. A proposed interstate allocation of the Walker River was negotiated at one time but was not implemented. The Walker

River was not included in the settlement legislation for the adjoining Truckee and Carson River Basins. In the recent past, interstate activities on the Walker River have involved water quality and fishery issues associated with river operations and not water allocation issues.

Klamath River

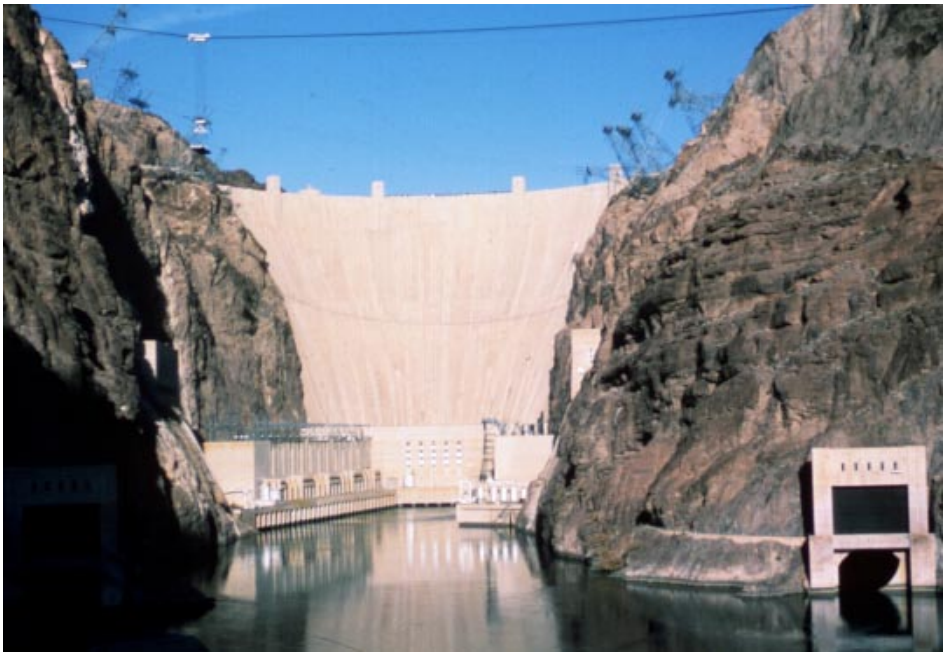
An interstate compact providing for administration of the Klamath River was adopted by California and Oregon and ratified by Congress in 1957. The compact is managed by a Commission consisting of the Director of the Oregon Water Resources Department, the Director of the California Department of Water Resources, and a non-voting federal representative who serves as chairperson.

For the Compact's first 39 years, there was little controversy concerning the upper river basin. Recent changes in operation of USBR's Klamath Project facilities to protect listed fish species have affected irrigation supplies available from the project. The State of Oregon has begun a comprehensive water rights adjudication for its portion of the basin. USBR is drafting a new operations plan for its project to formalize procedures for meeting the needs of listed fish species in Klamath Lake and listed anadromous fish downstream in the lower river. The Klamath River Compact Commission began facilitating a process in cooperation with USBR and basin water users to identify voluntary solutions to water shortages affecting the upper basin. The effort seeks to achieve agreement on ways to secure sufficient water for all needs, rather than on asserting claims to rights.

Colorado River

Colorado River water management activities are described in detail in Chapter 9. The major issue facing California is its use of Colorado River water in excess of the amount apportioned to it by the existing body of statutes, court decisions, and agreements controlling use of the water supply among the seven basin states. California's basic apportionment of river water is 4.4 maf of consumptive use per year (plus a share of surplus flows, when available), as compared to its present consumptive use of up to 5.3 maf/yr. California's use has historically exceeded the basic apportionment because California has been able to divert and use Arizona's and Nevada's unused apportionments, and to divert surplus water. With completion of the Central Arizona Project and the 1996 enactment of groundwater banking legislation, Arizona used more than its basic apportionment in 1997.

California has been meeting with the other basin states to develop a plan for California to reduce its use of Colorado River water to the State's basic apportionment. A draft plan has been developed by the Colorado River Board of California and the local agencies it represents. As described in detail in Chapter 9, the plan includes actions such as water transfers from agricultural users of river water to urban users in the South



USBR's Hoover Dam on the Colorado River was a major engineering feat at the time of its construction and provided jobs for thousands of Depression-era workers. Today, the dam is an important source of water and power for Southern California.

Coast Region, lining of portions of the All American and Coachella Canals, and groundwater banking. As presently envisioned, implementing California's plan would occur in two phases, with projects that are presently well-defined (e.g., canal lining, a San Diego/ Imperial Valley water transfer) implemented in the first phase.

Regional and Local Programs

Local Agency Groundwater Management Programs

In most western states, the rights to the use of surface water and groundwater resources are administered by the states. California administers rights to surface water at the State level, but not rights to groundwater. In California, groundwater may be managed under a variety of authorities, ranging from judicial adjudication of individual basins to several forms of local agency management. Some local agencies have specific statutory authority to manage groundwater resources in their service areas. Other local agencies may manage groundwater under authority provided by general enabling legislation, such as Water Code Section 10750 *et seq.* A few counties have adopted local ordinances dealing with groundwater management.

The 1992 enactment of AB 3030 (Water Code Section 10750 *et seq.*) provided broad general authority for local agencies to adopt groundwater management plans and to impose assessments to cover the cost of implementing the plans. To date, about 150 local agencies have adopted AB 3030 groundwater management plans. Under other groundwater management authorities, there are 7 agencies with AB 255 plans and over 50 agencies with some other form of statutory authority.

The number of agencies adopting AB 3030 plans is increasing. Quantifying the number of plans adopted is somewhat uncertain, since there is no requirement in the statute that agencies adopting plans file copies of those plans with the Department or SWRCB. A tabulation of agencies with AB 3030 plans, together with agencies managing groundwater under some other authority, can be found in the Department's 1998 report to the Legislature on local agency groundwater management.

Watershed-Based Planning

There has been increased interest in watershed-based planning, sometimes prompted by water quality regulatory programs. Watersheds and sub-watersheds are logical units for implementing SDWA source water protection programs and CWA nonpoint source pollution control programs. "Watershed planning" can have a range of meanings—some people associate watershed planning with small, community-based watershed restoration efforts, often carried out via a coordinated resources management plan. Others think of larger-scale efforts that focus on nonpoint source pollution control, such as SWRCB's watershed management initiative. Some watershed-based planning activities are reviewed below.

Nonpoint Source Pollution Control Watershed Planning. SWRCB and the nine regional water quality control boards are implementing a watershed management approach to administering water pollution control programs, addressing point and nonpoint

USBR's Spring Creek Debris Dam was constructed to control runoff reaching the Sacramento River from part of the Iron Mountain Mine site.

TABLE 2-7

Partial List of Targeted Watersheds and Watershed Activities Identified for the Watershed Management Initiative

Regional Board	*Targeted Watershed*	*Targeted Watershed Priorities/Activities*
Region 1 North Coast	Russian/Bodega	Fish restoration, erosion/sedimentation control, riparian enhancement
	Lost River and Klamath River upstream of Iron Gate Dam	Stream restoration on Clear Lake tributaries (Modoc County)
	Shasta River and tributaries	Irrigation return flows, nutrient and temperature reductions, irrigation water conservation
	Scott River and tributaries	Temperature reduction, irrigation water conservation, erosion/ sedimentation control
	Other Klamath River tributaries upstream of Scott River confluence	Fish restoration, erosion/sedimentation control
	Garcia Watershed	Fish restoration, erosion/sedimentation control, temperature reduction
	Humboldt Bay	Fish restoration, erosion/sedimentation control
Region 2 San Francisco Bay	Napa River	Riparian and wetland restoration, sedimentation control, volunteer monitoring
	Petaluma River	Riparian and wetland restoration, sedimentation control, animal waste control, volunteer monitoring
	Tomales Bay	Riparian restoration, sedimentation control, mine waste management, on-site disposal, volunteer monitoring
	San Francisquito Creek	Riparian and wetland restoration, sedimentation control, urban runoff prevention and control, volunteer monitoring
	Walnut Creek	Riparian restoration, sedimentation control, urban runoff prevention and control, volunteer monitoring
	Suisun Marsh	Riparian and wetland restoration, sedimentation control, construction and agricultural activities, volunteer monitoring and education
	Alameda Creek	Riparian and wetland restoration, sedimentation control, construction and agricultural activities, groundwater protection, volunteer monitoring and education
Region 3 Central Coast	Salinas River	Agricultural activities, erosion/sedimentation control, riparian and wetland enhancement and restoration
	Morro Bay	Erosion/sedimentation control, abandoned mines, road construction, agricultural activities, riparian and wetland enhancement and restoration
	San Lorenzo	Erosion/sedimentation control, road construction and maintenance, riparian and wetland enhancement and restoration
	Pajaro River	Nonpoint source pollution control, riparian and wetland enhancement and restoration
	Santa Maria River	Nonpoint source pollution control, riparian and wetland enhancement and restoration

TABLE 2-7

Partial List of Targeted Watersheds and Watershed Activities Identified for the Watershed Management Initiative (continued)

Regional Board	*Targeted Watershed*	*Targeted Watershed Priorities/Activities*
Region 4 Los Angeles	Calleguas Creek	Reduce nutrients, pesticides, and sediments in irrigation water; restore aquatic and riparian habitats; flood control; enhance recreational uses
	Ventura River Watershed	Restore aquatic habitats; implement flood control; enhance recreational uses
	Los Angeles River	Restore aquatic and riparian habitats; enhance recreational uses; reduce pollutants
	Santa Monica Bay	Reduce pollutants from boatyards and marinas; enhance recreational uses; restore wetlands
Region 5 Central Valley	Lower San Joaquin River Watershed	Selenium, agriculture, dairies, temperature, urban runoff
	Sacramento-San Joaquin Delta	Agriculture, sediments, bacteria, dredged material, dissolved oxygen, urban runoff
	Lower Sacramento River Watershed	Agriculture, urban runoff, mercury, heavy metals, nitrates, septic systems, fisheries
	Cache Creek Watershed and Clear Lake	Nutrients (algal blooms), mercury
	Pit River	Hydromodification, nutrients (algal blooms), dissolved oxygen, turbidity/sedimentation, temperature, agriculture, grazing, silvaculture
	Tulare Lake	Salts, pesticides, boron, chloride, molybdenum, sulfate, dissolved oxygen, bacteria, used oil
Region 6 Lahontan	Lower Truckee River	Roadside drainage, erosion control, urban runoff, fisheries habitat improvement, wetlands enhancement, stream restoration
	Upper Truckee River	Sedimentation control, nutrients from watershed disturbances; watershed education; restoration of wetland function, riparian areas, and/or river morphology and function
	Carson River	Erosion control, disposal of livestock waste, watershed education, wetland/riparian restoration
Region 7 Colorado River	Imperial Valley Watershed	Agricultural pollution control
	Coachella Valley Watershed	Agricultural pollution control, groundwater protection
Region 8 Santa Ana	Chino Basin Watershed	Agricultural runoff, dairies, salt build-up in groundwater
	Newport Bay Watershed	Toxics, nutrients, pathogens, sediments
Region 9 San Diego	San Diego Bay - all tributaries	Urban runoff, public education
	San Diego Bay	Copper leaching from boat hulls, oil spills
	Otay River Valley	Urban runoff, public education, pollutant loadings
	Sweetwater River	Heavy metals, petroleum products, public education, nutrient transport, sediment transport
	Aliso Creek	Coliform contamination
	Santa Margarita River	Nitrogen and phosphorus loading from agriculture

pollution sources. In 1997, SWRCB, RWQCBs, and EPA began a new program known as the Watershed Management Initiative. Targeted watersheds and watershed priorities or activities were identified for each of California's nine RWQCBs. Examples of targeted watersheds and watershed priorities or activities are listed in Table 2-7. Federal CWA funding administered by SWRCB may be used to work on priority programs.

Upper Sacramento River Fisheries and Riparian Habitat Plan. In 1986, State legislation (SB 1086) called for preparation of a management plan to protect, restore, and enhance the fishery, riparian habitat, and wildlife of the upper Sacramento River. The plan, published in 1989, was prepared by an advisory council working closely with a wide range of agency representatives and stakeholders. The plan recommended implementation of 20 fishery improvement actions, several of which (for example, constructing a temperature control device at Shasta Dam and improving fish passage at USBR's Red Bluff Diversion Dam) were subsequently included in CVPIA. Other actions, such as habitat restoration at Mill Creek, are being implemented largely under State authorities with the participation of local property owners and other stakeholders.

In 1992, the Upper Sacramento River Advisory Council was reconvened by the Secretary for Resources to "complete its earlier work concerning riparian habitat protection and management, including the development of a specific implementation program." The council in turn established a riparian committee to define the inner and outer zones of a proposed conservation area, provide the basic framework of the riparian plan, and evaluate and recommend a suitable organizational structure to implement the riparian plan. Detailed mapping of the riparian corridor continues, and the committee is continuing to refine mechanisms to manage the proposed conservation area.

San Joaquin River Management Program. The San Joaquin River Management Program was authorized by 1990 State legislation that established an advisory council and action team, and directed the Secretary for Resources to coordinate their activities in preparing a program to develop solutions to meet water supply, water quality, flood protection, fisheries, wildlife habitat, and recreation needs on a specified segment of the San Joaquin River. Members of the advisory council and action team included State, federal, and local agencies and stakeholders representing a variety of interests. The members developed a consensus-based plan addressing resource issues listed in the authorizing legislation; the plan was published in 1995. Subsequent State legislation extended the original 1995 termination of the program and further

USBR is evaluating the fishery impacts of different types of pump diversions to the Tehama-Colusa Canal. One alternative for improving fish passage at Red Bluff Diversion Dam would be to leave the dam's gates in the raised position and use a pumping plant to make TCC diversions. The research plant contains three pumps–one helical pump and two Archimedes screw pumps (right side of photo).

directed SJRMP to work with programs such as CVPIA and CALFED to seek funding for actions recommended in the 1995 plan.

The plan recommended implementation of specific projects and further study of other projects, such as enlargement of Friant Dam and construction of Montgomery Reservoir offstream storage reservoir for fishery water supply. Some of the recommended projects are being implemented, including a pilot program for real-time management of agricultural drainage discharge to the San Joaquin River. Other recommended projects may be implemented through CVPIA's AFRP or the CALFED Category III program.

Conservancies. Other mechanisms for watershed-based planning are conservancies created by special enabling legislation. These conservancies are usually focused on land acquisition or management activities. Two conservancies have a water-related orientation. The Tahoe Conservancy was created in 1984 to acquire and manage property in the Lake Tahoe Basin for the primary purpose of maintaining the lake's water quality. Other authorized purposes of the conservancy are to provide access to public lands, preserve wildlife habitat, and perform environmental restoration projects. The conservancy is governed by a seven-member board, with members from the City of South Lake Tahoe, El Dorado County, Placer County, the Resources Agency, Department of Finance, and two members appointed by the Legislature. A representative of the U.S. Forest Service is a non-voting board member. Since voter enactment of the 1982 Lake Tahoe Acquisitions Bond Act, the conservancy has spent about $85 million in land acquisition and erosion control projects in the basin.

The San Joaquin River Conservancy was created by 1992 legislation to acquire and manage lands along the river in Fresno and Madera Counties for recreational and wildlife habitat. As established in the enabling legislation, the conservancy is governed by a board of six voting members and seven non-voting ex-officio members.

Non-Governmental Organizations. Some watershed-based planning activities are being carried out by voluntary non-governmental organizations, often in the form of non-profit corporations. These NGOs are typically focused on resource issues in small watersheds, where they may partner with a resource conservation district to carry out specific projects. Examples of such efforts are found on Mill Creek and Deer Creek in the Sacramento Valley, where local landowners banded together to improve fishery habitat on the creeks. Actions taken or being considered include addressing fish passage problems at water diversion structures, using groundwater for irrigation instead of surface water during times critical to fish passage, and fencing riparian habitat to exclude livestock.

Implementation of Urban Water Conservation MOU

The 1991 *Memorandum of Understanding Regarding Urban Water Conservation in California* defined a set of urban best management practices and procedures for their implementation, and established a California Urban Water Conservation Council composed of MOU signatories (local water agencies, environmental groups, and other interested parties). More than 200 entities have signed the MOU. The CUWCC has monitored implementation of BMPs and reported progress annually to the SWRCB. The council developed a plan providing for ongoing review of BMPs and potential BMPs. In late 1996, the council initiated a review of the BMPs to clarify expectations for implementation and to develop an implementation evaluation methodology. Revised BMPs were adopted in 1997, as described in Chapter 4.

Implementation of Agricultural Efficient Water Management Practices MOU

The Agricultural Efficient Water Management Practices Act of 1990 (AB 3616) required the Department to establish an advisory committee to develop EWMPs for agricultural water use. Negotiations among agricultural water users, environmental interests, and governmental agencies on a MOU to implement EWMPs were completed in 1996. The MOU established an Agricultural Water Management Council to oversee EWMP implementation, much like the organizational structure that exists for urban BMPs, and also provided a mechanism for its signatories to evaluate and endorse water management plans. By May 1998, the MOU had been signed by 31 agricultural water suppliers irrigating about 3 million acres of land, as well as by over 60 other entities. More detail on the agricultural MOU is provided in Chapter 4.